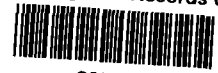




**NL INDUSTRIES, INC.**

EPA Region 5 Records Ctr.



295977

**THREE LINCOLN CENTRE  
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**Terry S. Casey**  
*Director, Environmental Affairs*  
506 N. Pine St.  
Tomball, Texas 77375

February 17, 2005

Mr. Brad Bradley  
USEPA – Region V  
77 West Jackson Blvd. (SR-6J)  
Chicago, IL 60604-3507

Dear Brad:

Attached is the proposed "Supplemental Sampling and Analysis Plan" (Plan) for the Chicago Dutch Boy site. Assuming you and Mr. Graham find the Plan satisfactory, NL will request access to the site from the City of Chicago to implement the Plan. Depending on the granting of access, NL should have results in four to eight weeks. Please contact me with any questions.

Sincerely,

Terry S. Casey  
Director, Environmental Affairs

TSC:krr  
Attachment

cc: David Graham, City of Chicago  
Jim Bulman, ESC (w/o attachment)



**ENVIRONMENTAL STRATEGIES CONSULTING LLC**

11911 Freedom Drive, Suite 900 ▪ Reston, VA 20190 ▪ (703) 709-6500 ▪ Fax (703) 709-8505

**SUPPLEMENTAL SAMPLING AND ANALYSIS PLAN  
FORMER DUTCH BOY SITE  
CHICAGO, ILLINOIS**

**PREPARED  
FOR  
NL INDUSTRIES, INC.**

**PREPARED**

**FEB 15 2005**

**BY**

**ENVIRONMENTAL STRATEGIES CONSULTING LLC**

**FEBRUARY 15, 2005**

Contents

	Page
<b>Introduction</b>	1
<b>Site Background</b>	2
Site Location and Description	2
Geology and Hydrogeology	2
Climate	2
Previous Environmental Investigations	2
<b>Sampling Program</b>	4
Sampling Locations	4
Soil Sampling Procedures	4
Sample Handling	5
Sample Analysis	6
Equipment Decontamination	6
<b>Report</b>	7
<b>List of Figures:</b>	
Figure 1 – Site Locus	
Figure 2 – Site Plan	
Figure 3 – Proposed Sampling Locations	
<b>List of Tables:</b>	
Table 1 – XRF Screening Results for Lead in Soil	
Table 2 – Analytical Results for Lead in Soil	

## **Introduction**

Environmental Strategies Consulting LLC, on behalf of NL Industries, Inc., has prepared this Supplemental Sampling and Analysis Plan (SAP) for the former Dutch Boy Site in Chicago, Illinois. The objectives of the supplemental sampling are to confirm the findings of the re-assessment surface survey and soil screening activities conducted at the site in June 2003 and evaluate lead concentrations in soil in areas not previously investigated. The SAP describes the methods and procedures that will be followed for sample collection, sample handling, and associated chain-of-custody documentation for the additional onsite sampling activities. All sampling and analyses will conform to U.S. Environmental Protection Agency (EPA) Region guidance regarding sampling, quality assurance/quality control ("QA/QC"), data validation, and chain of custody procedures. Personnel conducting field activities at the former Dutch Boy facility will be subject to the protocols and requirements specified in this SAP. This SAP is applicable to all Environmental Strategies employees and subcontractors working under the direction of Environmental Strategies.

## **Site Background**

### **Site Location and Description**

The Dutch Boy Site is located at 12000 to 12054 South Peoria Street and 901 to 935 West 120<sup>th</sup> Street, Cook County, Chicago, Illinois (Figure 1). The 5.25-acres Site is bordered to the north by West 120<sup>th</sup> Street and a fire station, to the east by South Peoria Street and a vacant lot, to the south by rail lines of the Illinois Central Gulf Railroad, and to the west by a vacant lot. The nearest residential areas are 300 to 500 feet north, east, and south of the Site. All buildings on the property have been removed. The property is surrounded by 6-foot-high chain-link fencing. Figure 2 shows a Site plan.

### **Geology and Hydrogeology**

The Site geology and hydrogeology are described in the Remedial Design/Remedial Action (RD/RA) Work Plan (1999), which included a Quality Assurance Project Plan (QAPP) and a site-specific Health and Safety Plan (HASP).

### **Climate**

The climate in the vicinity of the Site is described in the RD/RA.

### **Previous Environmental Investigations**

In 1999, NL Industries, Inc., conducted soil remediation at this site, in accordance with the terms of the March 26, 1996, Unilateral Administrative Order (UAO) issued to NL by the U.S. Environmental Protection Agency (EPA). NL also conducted supplemental remedial actions at the site in accordance with the June 9, 1999, Consent Decree (CD) between the City of Chicago and NL. The remedial work completed included excavation of lead-impacted soil from onsite unpaved surface areas, the offsite parkway area, and from limited onsite paved surface areas, in addition to other actions. At the conclusion of this work in 1999, excavated areas were backfilled with clean, imported fill material, while the remainder of the site remained capped with existing concrete pavement and foundations, in accordance with the terms of the UOA and the CD. Subsequent to the completion of the 1999 site remedial actions, large portions of the

concrete cap were removed by the City of Chicago, and the underlying soil was exposed in the central portion of the site. Supplemental testing addressed those discrete portions of soil that were exposed when the City of Chicago removed concrete cap and exposed the underlying soil.

Between July 2000 and February 2001, the City of Chicago removed the majority of the concrete foundations that had been left in place. TetraTech EM, on behalf of the City of Chicago, conducted additional soil and groundwater sampling at the Site in May 2001. In September 2001, on behalf of the EPA, TetraTech conducted additional soil sampling on the Site.

In June 2003, Environmental Strategies collected soil samples from 27 borings, located where the concrete pavement or foundations had been removed in 2000 and 2001, and where TetraTech had identified areas of soil with elevated lead concentrations. Composite soil samples at 1-foot intervals were screened for lead using an X-ray fluorescence (XRF) detector, in accordance with procedures approved by the EPA. Selected soil samples were also analyzed for lead at an offsite EPA-accredited laboratory using EPA Method 6010B. Tables 1 and 2 present the analytical results. Figure 2 displays the locations and lead concentrations for the 2001 and 2003 borings.

The 2003 investigation identified lead concentrations greater than 1,400 mg/kg in 14 of the 27 soil borings in the areas that had been previously covered by building foundations. These areas are designated "A", "B", "C", and "D" on Figures 2 and 3.

The following sections of the SAP provide detailed information on the proposed sampling activities in the vicinity of the previously sampled areas.

### **Sampling Program**

The sampling methods, field documentation, and sample handling and shipping will follow the EPA Superfund Program Representative Sampling Guidance, Volume 1: Soil (EPA 1995) and Environmental Strategies' standard operating procedures (SOPs).

#### **Sampling Locations**

As shown on Figure 3, additional sample locations are proposed in Areas A, B, and C as well as in proximity to previously sampled locations in these areas. The majority of the sampling points in Area A will be collected to the north of previous samples and collected from a grid, spaced approximately 30 feet apart. In area C, a sampling grid will be spaced approximately 20 feet apart. In addition, samples also will be collected in the general location of previous samples designated ESC-03, ESC-05, RSB-15, ESC-09, ESC-19, ESC-20, ESC-24, and ESC-25 to confirm the previous findings. A total of 35 sampling locations are shown in Figure 3. However, piles of concrete rubble may prevent the advancement of borings at some locations and therefore, the locations will be adjusted based on field conditions. The proposed maximum depth of the borings is 4 feet bgs, which is consistent with the maximum excavation depth approved by EPA for the previous Site remediation. The samples will be analyzed at an offsite laboratory to verify the previous XRF screening results.

#### **Soil Sampling Procedures**

Soil samples will be retrieved using a Geoprobe direct-push rig. Continuous soil samples will be collected from the borings using 4-foot-long, 2-inch-diameter samplers fitted with a new plastic liner for each sample interval. Upon recovery, the liner will be removed from the sampler and split open using a utility knife. The boring location and the sample description will be recorded in a field book and on soil boring logs.

Composite samples will be collected from each 1-foot depth interval. Extraneous material that is not vital to characterizing the soil quality (e.g., concrete dust, leaves, grass, trash) will be identified and discarded from the sampled material. The soil material will be homogenized in accordance with Environmental Strategies' SOP and EPA Superfund sampling guidance (EPA 1995). A representative split of the homogenized sample will be placed in the appropriate

sample container and submitted for chemical analysis. Any soil material remaining after sample collection will be replaced in the borehole.

Quality assurance/quality control (QA/QC) samples consisting of field duplicate samples and equipment blank will accompany the soil samples. The field duplicate samples will provide a check of the reproducibility of the analytical results and will be sent as "blind" duplicates (i.e., the laboratory will be unable to distinguish a field duplicate from any other sample). The identity of the field duplicate sample will be recorded in the project field notebook. One field duplicate will be collected for every 20 samples submitted to the laboratory.

One equipment blank will be collected for use as a QC check of the decontamination procedures for the sampling equipment. The equipment blank will be prepared by pouring laboratory-provided analyte-free water over the sampling equipment and collecting the rinsate in sample containers. The QA/QC samples will be labeled, documented, and handled in the same manner as other field samples, as described in the following section.

### **Sample Handling**

Sample containers for the investigation activities will be prepared and supplied by the contracted laboratory, which will be accredited by the EPA. The procedures and associated protocols for container cleaning documented in the Test Methods for Evaluating Solid Wastes, Third Edition (SW-846) will be followed.

A self-adhesive label will be affixed to each sample container and covered with clear tape. The sample label will contain the following information:

- job name
- sample identification number
- sample collection date and time
- sampler's initials
- preservatives added (if any)
- sample analysis

The sampling information will also be recorded in the dedicated field logbook. Following sample collection, the outside of all containers will be rinsed with analyte-free water, if necessary, then wiped clean and dried.



Sample custody is controlled and maintained through chain-of-custody procedures. Chain of custody is the means by which the possession and handling of samples will be tracked from the field to the laboratory. A sample is considered to be in a person's custody if it is in the person's possession or in the appropriate ice chest or shipping container and that person has secured it to prevent tampering. Field personnel will be responsible for the custody of samples from the time they are collected until they are transferred to the sample shipper for delivery to the laboratory. The samples will be stored at 4°C in an insulated cooler prior to shipment to the analytical laboratory.

The sample custody procedures for the field activities are outlined in the QAPP. A copy of the chain-of-custody form will be retained as a permanent record in the project files.

### **Sample Analysis**

The samples will be analyzed for lead at an EPA-accredited offsite laboratory using EPA Method 6010B. The composite samples collected below 1 foot bgs in areas that were previously remediated will be placed on hold, and successive depths will only be analyzed if the lead concentration in the overlying sample exceeds the 1,400 milligram per kilogram criterion.

### **Equipment Decontamination**

All non-disposable sampling equipment will be decontaminated in the field between each use in accordance with the following general procedure:

- tap water wash with non-phosphate detergent to remove all visible material
- tap water rinse
- rinse with analyte-free water
- air dry

All decontamination wash and rinse water generated during the sampling activities will be poured onto the ground at the property at which the equipment was used, and allowed to infiltrate into the underlying soil.

### **Report**

The results of the supplemental sampling will be documented in a report and will include the following:

- information, including drawings of sample locations, that demonstrates sampling was performed in conformance with the specifications in the approved SAP
- soil sampling results
- analytical data

The report will be completed within 60 days of the completion of the sampling activities.

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## Figures

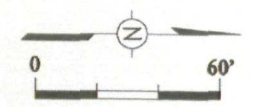
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**Figure 1**  
**Site Location**  
**Former Dutch Boy**  
**Chicago, Illinois**



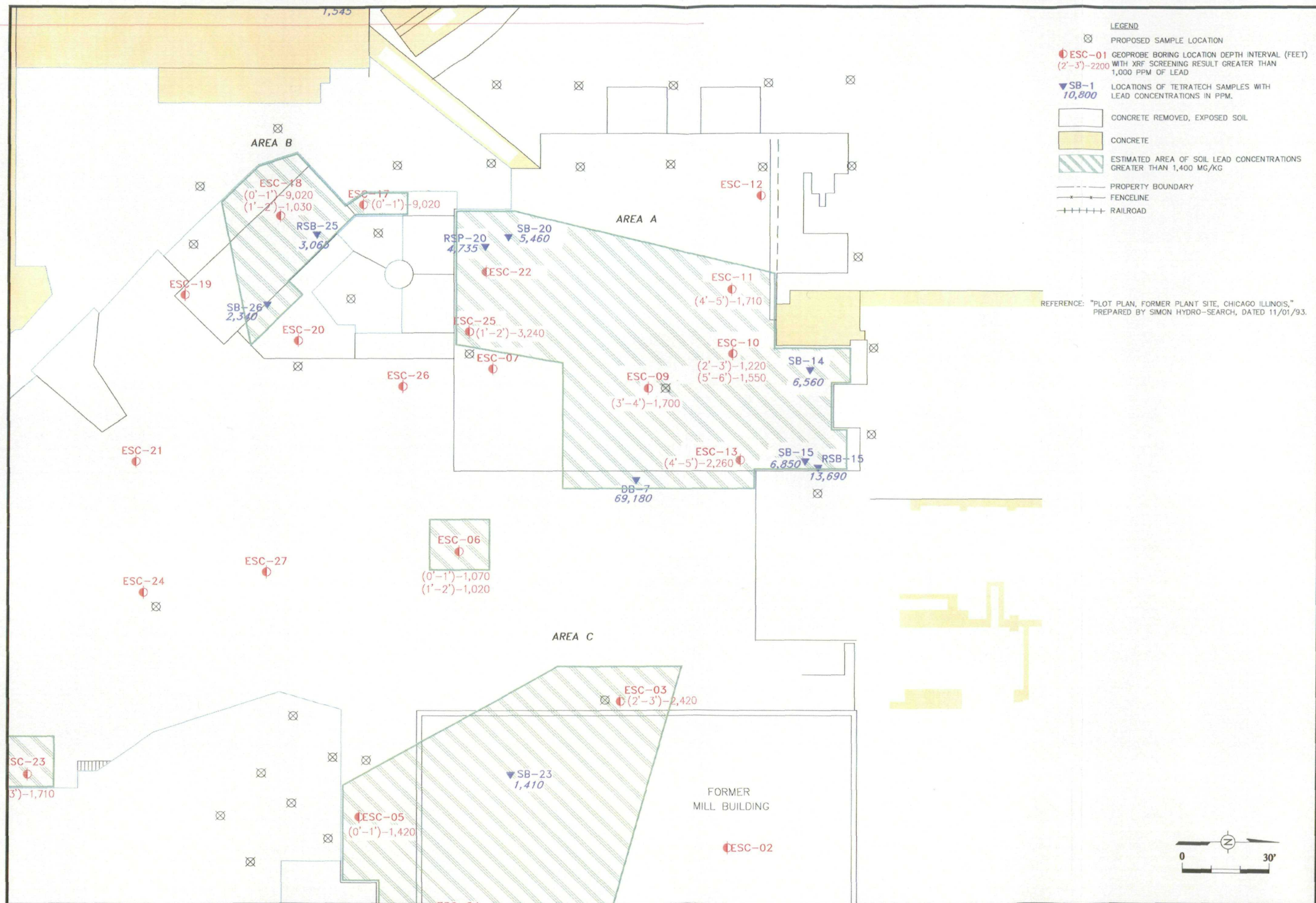
- LEGEND
- ESC-01 GEOPROBE BORING LOCATION DEPTH INTERVAL (FEET) WITH XRF SCREENING RESULT GREATER THAN 1,000 PPM OF LEAD
  - SB-1 10,800 LOCATIONS OF TETRATECH SAMPLES WITH LEAD CONCENTRATIONS IN PPM.
  - CONCRETE REMOVED, EXPOSED SOIL
  - CONCRETE
  - ESTIMATED AREA OF SOIL LEAD CONCENTRATIONS GREATER THAN 1,400 MG/KG
  - PROPERTY BOUNDARY
  - FENCELINE
  - RAILROAD



REFERENCE: "PLOT PLAN, FORMER PLANT SITE, CHICAGO ILLINOIS,"  
PREPARED BY SIMON HYDRO-SEARCH, DATED 11/01/93.

<p><b>FORMER DUTCH BOY SITE</b> CHICAGO, ILLINOIS PREPARED FOR NL INDUSTRIES</p>	<p><b>Figure 2</b> <b>SITE PLAN</b></p>	<p><b>ENVIRONMENTAL STRATEGIES CONSULTING LLC</b> 11911 FREEDOM DRIVE SUITE 900 RISTON, VIRGINIA 20190 (703) 709-6500</p>
<p>Drawn By: EGC Checked: Approved: DWG Name: 12750710</p>		





Drawn By: EGC Checked: Approved: DWG Name: 12750711	FORMER DUTCH BOY SITE CHICAGO, ILLINOIS PREPARED FOR NL INDUSTRIES
	Figure 3 PROPOSED SAMPLE LOCATIONS
ENVIRONMENTAL STRATEGIES CONSULTING LLC 11911 FREEDOM DRIVE SUITE 900 RESTON, VIRGINIA 20190 (703) 709-6500	

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## Tables

**Table 1**  
**XRF Screening Results for Lead in Soil (a)**  
**Former Dutch Boy Site, Chicago, Illinois**  
**June 16 and 17, 2003**

<b>Boring</b>	<b>Reading</b>	<b>+/-</b>	<b>Reading</b>	<b>+/-</b>	<b>Reading</b>	<b>+/-</b>	<b>Reading</b>	<b>+/-</b>	<b>Reading</b>	<b>+/-</b>	<b>Reading</b>	<b>+/-</b>
<b>Depth (feet)</b>	<b>0-1</b>	<b>1-2</b>	<b>2-3</b>	<b>3-4</b>	<b>4-5</b>	<b>5-6</b>						
ESC-01	<54	<82	<93	<95	<78	<76						
ESC-02	107	<87	169	285	<67	<69						
ESC-03	<76	<68	2,420 (b)	190	<69	<80						
ESC-04	1,010	40	1,540	170	1,050	<89						
ESC-05	1,420	160	882	130	<130	326						78
ESC-06	1,070	130	2,190	180	337	229						71
ESC-07	529	83	<110	70	97	<81						
ESC-08	---	---	---	---	---	---						
ESC-09	<74	370	<100	1,700	136	<89						
ESC-10	523	110	1,220	140	890	1,550						160
ESC-11	634	100	924	110	1,710	---						
ESC-12	188	92	<130	<81	<96	<88						
ESC-13	<92	191	121	229	2,260	345						80
ESC-14	810	<120	<90	792	173	190						66
ESC-15	2,100	180	5,670	320	---	---						
ESC-16	56,200	3,500	14,100	780	---	---						
ESC-17	9,020	520	<82	<91	78	<83						
ESC-18	2,690	350	293	100	<130	226						110
ESC-19	<96	128	<66	567	<77	<69						
ESC-20	764	<81	146	93	284	177						48
ESC-21	104	61	110	65	---	---						
ESC-22	242	69	967	110	---	---						
ESC-23	561	100	1,710	180	<75	<91						
ESC-24	233	72	<120	403	182	188						57
ESC-25	514	90	193	222	216	167						63
ESC-26	177	68	275	83	<72	<64						
ESC-27	387	89	<95	<72	1,220	<71						

a/ Measured in parts per million (ppm); --- = not measured due to subsurface obstruction or poor recovery.

b/ Cinders in fill material.



Table 2  
Analytical Results for Lead in Soil  
Former Dutch Boy Site  
Chicago, Illinois  
June 16 through 17, 2003

<u>Boring</u>	<u>Depth (feet)</u>	<u>Concentration of Lead (mg/kg)</u>
ESC-01	5-6	7.5
ESC-02	2-3	8.1
ESC-02	3-4	39
ESC-03	2.5-3.5	66,000
ESC-04	0-1	1,800
ESC-04	1-2	1,500
ESC-04	5-6	29
ESC-05	1-2	1,300
ESC-05	5-6	1,100
ESC-06	2-3	1,100